

REMARKS/ARGUMENTS

This application has been carefully reviewed in light of the Office Action dated June 3, 2010. Claims 1, 2, 4-6, 8, 9, and 11-20 are pending in this application. Claims 1, 9, 17, and 18 are the independent claims. Claims 3, 7 and 10 have been cancelled without prejudice. It is believed that no new matter is involved in the arguments presented herein.

Reconsideration and entrance of the amendment in the application are respectfully requested.

Art Based Rejections:

Claims 1-2, 4-6, 8-9, and 11-14 were rejected under 35 U.S.C. § 103(a) over Yamamoto (*Magnetic Properties of Ba-Zn-System W-Type Hexagonal Ferrite Magnets*); Claims 1, 8, 11 and 14 were rejected under §103(a) over Yamamoto in view of Toyota (U.S. Patent No. 5,866,028); Claim 12 was rejected under §103(a) over Yamamoto in view of Taguchi (U.S. Patent No. 6,258,290); Claims 15-17 were rejected under §103(a) over Yamamoto in view of Kijima (JP 02-180004, herein referred to under the English translation PTO 09-1223); Claim 18 was rejected under §103(a) over Yamamoto in view of Kijima and further in view of Taguchi; Claims 19-20 were rejected under §103(a) over Yamamoto in view of Kijima in view of Taguchi, and in further view of Toyota; Claims 1-9 and 11-17 was rejected under §103(a) over Kijima in view of Yamamoto; Claim 1, 8, 11, and 13 were rejected under §103(a) over Kijima in view of Yamamoto and further in view of Toyota; Claim 12 was rejected under §103(a) over Kijima in view of Yamamoto in view of Toyota, and further in view of Taguchi; Claim 18 was rejected under §103(a) over Kijima in view of Yamamoto and further in view of Taguchi.; Claims 19-20 were rejected under §103(a) over Kijima in view of Yamamoto in view of Taguchi and further in view of Toyota.

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the arguments below.

The Claims are Patentable Over the Cited References

1. Regarding the Examiner's indication as being obvious over Yamamoto (indication on pages 2-3 of this Office Action, indication only based on Yamamoto)

Claims 1, 2, 4-6, 8, 9, 11-14 of the present application have been found by the Examiner as obvious over Yamamoto.

		Fe ²⁺	M	Relationship with Yamamoto
Composition of Yamamoto		0.410	1.725	
The present Invention	X=0.3, a=2.2	1.54	0.66	Both Fe ²⁺ and M are out of scope.
	X=0.3, a=1.5	1.05	0.45	Both Fe ²⁺ and M are out of scope.
	x=0.7, a=1.5	0.45	1.05	Both Fe ²⁺ and M are out of scope.
	X=0.7, a=2.2	0.66	1.54	Both Fe ²⁺ and M are out of scope.

As one skilled in the art would readily appreciate, Yamamoto describes Ba_{1.092}Zn_{1.725}Fe²⁺_{0.410}Fe³⁺_{15.848}O₂₇ but both the amount of Zn and that of Fe²⁺ are out of the scope of the present application. Even if Ba_{1.092} were normalized to Ba₁, both the amount of Zn and that of Fe²⁺ would be out of the scope of the present application anyway.

In claim 1 of the present application, it is recited, "composition formula $AFe^{2+}_{a(1-x)}M_{ax}Fe^{3+}_bO_{27}$, wherein A represents at least one element selected from the group consisting of Sr, Ba, and Pb; and M represents at least one element selected from the group consisting of Zn, Co, Mn, and Ni", so that the amount of Fe^{2+} is reduced by the amount of the element M (such as Zn) being increased.

As one of skill in the art would recognize, even by examining the entire text of Yamamoto, there is no suggestion anywhere in Yamamoto, that the amount of Fe^{2+} is reduced by the amount of the element Zn being increased as in the present application.

The composition of a sintered body in Yamamoto obtained by adding 5.0wt% BaO to a compound $BaO \cdot 2ZnO \cdot 8Fe_2O_3$ (calcined body) followed by being sintered cannot satisfy at all the requirement of the compositions of claims 1 and 9 of the present application. In other words, if focused on " $Fe^{2+}_{a(1-x)}M_{ax}$ " in "composition formula $AFe^{2+}_{a(1-x)}M_{ax}Fe^{3+}_bO_{27}$ " in claims 1 and 9 of the present application, the amount of A (i.e., the amount of Ba) in Yamamoto does not depend on x, which determines the ratio of M.

In Yamamoto, regardless of the addition amount of BaO, x is about 0.81, which does not fulfill the requirement of the range of x defined in claims 1 and 9 of the present application i.e., $0.3 < x < 0.7$.

In the case that sintering occurs in the atmosphere as in Yamamoto, the amount of Fe^{2+} is reduced regardless of the amount of A (amount of Ba), the value of x is greater than 0.7, so that the value of x is out of the range defined in claims 1 and 9 of the present application.

2. Regarding the Examiner's indication as being obvious over Yamamoto and Toyota.
(pages 3-4 of this Office Action)

Claims 1, 8, 11 and 13 of the present application have been found by the Examiner as obvious over Yamamoto and Toyota.

The Examiner indeed correctly points out that there is a description "4πIs=5.0kG" in column 7 line 65 of Toyota.

However, totally incomprehensible is the Examiner's logic that the property obtained by Toyota could be also obtained by Yamamoto by combining Yamamoto and Toyota.

Both Toyota and Yamamoto are related to W-type ferrite. However, while Toyota employs a composition represented by "a chemical formula as $\text{SrO} \cdot 2(\text{FeO}) \cdot \text{n}(\text{Fe}_2\text{O}_3)$ with a range of n-value between 7.2 and 7.7 (See claim 1 of Toyota)", Yamamoto employs a composition of $\text{BaO} \cdot 2\text{ZnO} \cdot 8\text{Fe}_2\text{O}_3$ (See Figs 1-10 in Yamamoto). Thus, the compositions of the main constituents of the two references are greatly different each other, i.e., Toyota is targeted at Sr ferrite which does not include Zn, while Yamamoto is targeted at Ba ferrite which includes Zn. The values of Fe_2O_3 are also different each other in the two references. In addition, while Yamamoto is characterized in adding BaO after calcinations (See Yamamoto, Abstract), Toyota proposes adding all of CaO, SiO₂ and C after calcination in claim 2, adding Cr₂O₃ and/or CoO in claim 3. Thus, Toyota and Yamamoto are different not only in the composition of the main constituents but also the kinds of additives.

Therefore, one skilled in the art would not have found it obvious to combine Toyota with Yamamoto.

3. Regarding the Examiner's indication on claim 12 (pages 4-5 of this Office Action, indication based on Yamamoto, Toyota and Taguchi)

The Examiner indeed correctly points out that there are a description " $4\pi Is=5.0kG$, $Br=4.8kG$ " in column 7 line 65 of Toyota, and a description "squareness of more than 80%" in Table 4 of Taguchi. In column 33, lines 52-53 of Taguchi which the Examiner points out, there is a description "they have excellent squareness in the demagnetization curve."

However, totally incomprehensible is the Examiner's logic that the property obtained by Toyota and Taguchi could be also obtained by Yamamoto by combining Yamamoto with Toyota and Taguchi

Both Toyota and Yamamoto are related to W-type ferrite, but as mentioned in detail above in "2. Regarding the Examiner's indication as being obvious over Yamamoto et al and Toyota (pages 3-4 of this Office Action)", the compositions of the main constituents in both references are greatly different each other, and the values of Fe_2O_3 are different each other in the two references. In addition, Toyota and Yamamoto are different not only in the composition of the main constituents but also in the kinds of additives.

Taguchi is related to M-type ferrite as recited in its claim 3, and is different from the present invention relating to W-type ferrite.

Therefore, one skilled in the art would not have found it obvious to combine Yamamoto with Toyota and Taguchi.

4. Regarding the Examiner's indication on claims 15-17 (pages 5-6 of this Office Action, indication based on Yamamoto and Kijima)

The Examiner points out in page 6, paragraph 1 of this Office Action that the term “bonded

magnet” has not been given patentable weight because the recitation occurs in the preamble. The term “bonded magnet”, however, appears not only in the preamble in claim 17 of the present application, and there is also a recitation in the last two lines of the claim like “the bonded magnet has a saturation magnetization of 5.0kG or more.”

Not convincing is the logic of the Examiner in page 6, line 14-16 of this Office Action, “it would have been obvious to one of ordinary skill in the art at the time of the invention that Yamamoto’s magnets contain a resin phase, as taught by Kijima, in order to produce the magnets effectively.”

The indication of page 5, lines 15-16 of this Office Action “regarding claim 15-16, Yamamoto teaches the ferrite magnet powder as claimed, however fails to teach that A is Sr

and/or B. (Note that B is incorrectly spelled for Ba.)” is incorrect, either. Since magnet powder of Yamamoto has a different composition from that claimed in the present application, this indication is incorrect.

5. Regarding the Examiner’s indication on claim 18 (pages 6-7 of this Office Action, indication based on Yamamoto and Taguchi)

There is a description in column 9, lines 44-49 of Taguchi “a coating type magnetic recording medium can be obtained in such a manner that a coating composition is prepared by mixing and kneading the magnet powder with a binder, and the coating composition is coated on a substrate comprising a resin or the like, followed by hardening if necessary, to form a magnetic layer.”

However, there is no description in Yamamoto and Taguchi. regarding a magnetic layer

references could be combined, not all elements recited in claim 18 of the present application could be provided.

6 . Regarding the Examiner's indication on claims 19 and 20 (pages 7-8 of this Office Action, indication based on Yamamoto, Taguchi and Toyota)

The Examiner admits that Yamamoto and Taguchi do not disclose a saturation magnetization of 5.2kG or more.

The Examiner also admits that though there is a description " $4\pi I_s=5.0\text{kG}$, $B_r=4.8\text{kG}$ " in column 7, line 65 of Toyota, there is no explicit description of a saturation magnetization of 5.2kG or more.

The Examiner, However, has concluded, upon referring to column 1, lines 39-47 of Toyota, that it would have been obvious to one ordinary skill in the art at the time of the invention to optimize saturation magnetization described in Toyota to 5.2kG in the recording medium.

In column 1, lines 39-47 of Toyota which the Examiner points out, there is a description, "in order to provide a ferrite material with larger degree of magnetization..., it has been proposed that $\text{SrO-Fe}_2\text{O}_3$ which is a main constituent of the M-type ferrite is expanded to the ternary system such as $\text{SrO-MeO-Fe}_2\text{O}_3$, wherein Me represents divalent metallic ions such as Co, Zn, or Fe, so that four types (W-type, X-type, Y-type, and Z-type) of more complicated hexagonal ferrite magnets having much stronger ferromagnetism can be fabricated." This description also appears in the "background art" of Toyota. Toyota employs, starting from the background art, a W-type ferrite using Fe as the above-mentioned Me, and proposes the composition recited in claim 1 as well as addition of predetermined additives (See claims 2 and 3). In spite of that, saturation magnetization obtained by Toyota remains 5.0kG. Accordingly, the above-mentioned

**7. Regarding the Examiner's indication as being obvious over Kijima and Yamamoto
(indication on pages 8-10 of this Office Action)**

		Fe ²⁺	M	Relationship with Kijima
Composition Range of Kijima		1.9-2.05	Zn: addition of 1.0-10mol% of Fe ²⁺	
The present invention	X=0.3, a=2.2	1.54	0.66	Both Fe ²⁺ and M are out of the scope.
	X=0.3, a=1.5	1.05	0.45	Both Fe ²⁺ and M are out of the scope.
	X=0.7, a=1.5	0.45	1.05	Both Fe ²⁺ and M are out of the scope.
	X=0.7, a=2.2	0.66	1.54	Both Fe ²⁺ and M are out of the scope.

As shown in the above-mentioned table, the range of Fe²⁺, which Kijima may take, is 1.9 to 2.05. On the other hand, the range of Fe²⁺, which the present application may take, is 0.45 to 1.54, which does not overlap with that of Kijima

The Examiner, however, has concluded, upon referring to Yamamoto, "it would have been obvious to one of ordinary skill in the art to reduce the Fe²⁺ range of Kijima to be of 1.54 (See page 9, paragraphs 3-4 of this Office Action.)

The Examiner has also concluded that, given that Kijima in combination with Yamamoto disclose magnetic powder or magnet as presently claimed, the substance obtained by this combination would satisfy the magnetization property as presently claimed (See from page 9, the last paragraph to page 10, paragraph 1 of this Office Action).

Yamamoto, however, proposes that 3-5wt% BaO is added to compound BaO·2ZnO·8Fe₂O₃

manufacturing anisotropic oxide magnetic powder having a hexagonal structure of $\text{MeFe}^{2+}_{2+x}\text{Fe}^{3+}_{16-x}\text{O}_{27}$, wherein Me is one or more selected from Ba, Sr and Pb; and x ranges from +0.05 to -0.10, wherein Fe_2O_3 and Fe_3O_4 are blended as iron oxides such that the mole ratio of Fe^{2+} and Fe^{3+} is (1-1.05):8, zinc oxide and/or a compound that changes to zinc oxide by heating is added such that Zn is 1.0-10mol% of Fe^{2+} , and then calcination is performed. Even if Yamamoto were combined with Kijima, the resulting disclosure would be limited to as such that the raw materials are blended as shown in claim 1 of Kijima followed by calcination, and then 3-5wt% of BaO powder is added. This does not disclose or suggest at all the technical idea of the present invention that the amount of Fe^{2+} is reduced by the amount of Zn being increased.

In Kijima, in order to obtain after calcination a magnetic powder $\text{MeFe}^{2+}_{2+x}\text{Fe}^{3+}_{16-x}\text{O}_{27}$, wherein Me is one or more selected from Ba, Sr and Pb; and x ranges from +0.05 to -0.10, " Fe_2O_3 and Fe_3O_4 are blended such that the mole ratio of Fe^{2+} and Fe^{3+} is (1-1.05):8, zinc oxide and/or a compound that changes to zinc oxide by heating is added such that Zn is 1.0-10mol% of Fe^{2+} ." It is not easy for one of ordinary skill in the art to combine Yamamoto with Kijima where raw materials are blended in order to obtain desired magnetic powder after calcination, and to add BaO powder after calcination in Kijima

As mentioned in our previous Remarks, the Examiner's argument "it would have been obvious to one of ordinary skill in the art to reduce the Fe^{2+} range of Kijima to be of 1.54" is not appropriate, either.

8. Regarding the Examiner's indication on claims 1, 8, 11 and 13 (pages 10-11 of this Office Action, indication as being obvious over Kijima, Yamamoto and Toyota)

The Examiner admits that Kijima and Yamamoto do not disclose saturation magnetization

The Examiner, however, refers to the description of " $4\pi I_s=5.0\text{kG}$ " in column 7, line 65 as well as column 1, lines 46-47 of Toyota, and has concluded that it would have been obvious to one of ordinary skill in the art at the time of the invention to have Kijima magnet to be of 5.0kG of saturation magnetization in order to fabricate stronger ferromagnetism (See this Office Action, page 11, paragraph 1.)

The Kijima and Toyota, however, employ different compositions. In other words, while Kijima recites in its claim 1, " $\text{MeFe}^{2+}_{2+x}\text{Fe}^{3+}_{16-x}\text{O}_{27}$, wherein Me is one or more selected from Ba, Sr and Pb; and x ranges from +0.05 to -0.10", Toyota employs a composition represented by "a chemical formula as $\text{SrO} \cdot 2(\text{FeO}) \cdot n(\text{Fe}_2\text{O}_3)$ with a range of n-value between 7.2 and 7.7 (claim 1 of Toyota)." Since $\text{MeO} \cdot 2(\text{FeO}) \cdot 8(\text{Fe}_2\text{O}_3)$ is obtained with $x=0$ in claim 1 of Kijima, the main constituents of both references are different each other.

Furthermore, Toyota proposes, besides employing the above-mentioned composition, an average grain size of $2\mu\text{m}$ or less of a sintering body in order to obtain high magnetic property (See claim 1 and Fig. 10 of Toyota). Kijima, however, is targeted at a method for producing magnetic powder and a plastic magnet, and not at a sintered magnet. Therefore, the approach described in Toyota of making the average grain size of a sintered body to be $2\mu\text{m}$ or less in order to obtain high magnetic property cannot be applied to Kijima

Furthermore, Toyota proposes adding all of CaO , SiO_2 and C after calcination in its claim 2, and adding Cr_2O_3 and/or CoO in its claim 3 in order to improve residual magnetic flux density (Br) or coercive force (iHc). The magnetic property obtained by Kijima, however, is very low as shown in Table 2 of Kijima, so that it may not be possible to obtain "a saturation magnetization of 5.0kG or more", which is the characteristic of claim 1 of the present application, even if the additives proposed by Toyota are added to Kijima.

Applicant respectfully traverses this conclusion by the Examiner.

9. Regarding the Examiner's indication on claim 12 (pages 11-12 of this Office Action, indication based on Kijima, Yamamoto et al, Toyota and Taguchi)

The Examiner indeed correctly points out that there is a description " $4\pi I_s = 5.0\text{kG}$, $B_r = 4.8\text{kG}$ " in column 7, line 65 of Toyota.

However, totally incomprehensible is the Examiner's logic that the property obtained by Toyota and Taguchi could be also obtained by Kijima by combining Kijima, with Yamamoto, Toyota and Taguchi. As mentioned in detail in "3. Regarding the Examiner's indication on claim 12 (pages 4-5 of this Office Action)", it is not easy itself to combine Yamamoto et al with Toyota and Taguchi. In addition, as mentioned in detail in "8. Regarding the Examiner's indication on claims 1, 8, 11 and 13 (pages 10-11 of this Office Action)", Kijima and Toyota employ different compositions. It is thus not easy itself to combine Kijima, Yamamoto, Toyota and Taguchi, so that the Examiner's indication is not convincing.

10. Regarding the Examiner's indication on claim 18 (pages 12-13 of this Office Action, indication based on Kijima, Yamamoto, and Taguchi)

There is a description in column 9, lines 44-49 of Taguchi "a coating type magnetic recording medium can be obtained in such a manner that a coating composition is prepared by mixing and kneading the magnet powder with a binder, and the coating composition is coated on a substrate comprising a resin or the like, followed by hardening if necessary, to form a magnetic layer." There is no description, however, in Kijima, Yamamoto or Taguchi.

Regarding a magnetic layer having a composition recited in claim 18 of the present application. Therefore, even if these references could be combined, not all elements recited in claim 18 of the present application could be provided.

11. Regarding the Examiner's indication on claims 19 and 20 (pages 13-14 of this Office Action, indication based on Kijima, Yamamoto, Taguchi, and Toyota)

The Examiner admits that Kijima, Yamamoto and Taguchi do not disclose a saturation magnetization of 5.2kG or more.

The Examiner also admits that though there is a description " $4\pi I_s=5.0\text{kG}$, $B_r=4.8\text{kG}$ " in column 7, line 65 of Toyota, there is no explicit description of a saturation magnetization of 5.2kG or more.

The Examiner, however, has concluded, upon referring to column 1, lines 39-47 of Toyota, that it would have been obvious to one ordinary skill in the art at the time of the invention to optimize saturation magnetization described in Toyota to 5.2kG in the recording medium.

Accordingly, the above-mentioned logic by the Examiner is not convincing from the same reasons as stated in detail in "6 . Regarding the Examiner's indication on claims 19 and 20 (pages 7-8 of this Office Action".

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Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 223-2365 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-5225.

Respectfully submitted,
ADLI LAW GROUP P.C.

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